COMPLETE LISTING OF CLAIMS

IN ASCENDING ORDER WITH STATUS INDICATOR

1. (original) An idle control system applicable to a fuel cell vehicle, the fuel cell vehicle comprising:

a fuel cell for generating electric power by supplying reaction gases using an air supply compressor and a hydrogen supply device;

a driving motor to which generated electric current from the fuel cell is supplied;

vehicle auxiliary equipment to which generated electric current from the fuel cell is supplied; and

a power storage device which is charged by generated electric current from the fuel cell; and

the idle control system for controlling the fuel cell vehicle according to driving modes, wherein,

when the fuel cell vehicle is in a normal driving mode, and not in an idle mode, the control system drives the fuel cell to generate electric current corresponding to a required power for driving the driving motor and the auxiliary equipment;

when the fuel cell vehicle is in a predetermined idle mode, the control system stops the fuel cell to stop power generation of the fuel cell by stopping the air compressor; and

while the fuel cell vehicle is in a predetermined idle mode, and when it is determined that the state of charge of the power storage device falls below a predetermined state of charge of the power storage device, the control system drives the fuel cell to generate a current corresponding to the optimum power generation efficiency of the fuel cell.

2. (original) An idle control system applicable to a fuel cell according to claim 1, wherein said power generation efficiency of the fuel cell system is defined by:
{(total electric power generated by the fuel cell)–(electric power consumed by the compressor for supplying the reaction gas to fuel the cell)} divided by (total electric power generated by the fuel cell).

3. (original) An idle control system applicable to a fuel cell vehicle according to claim 1, wherein said predetermined idle state is determined based on an operating state of an accelerator pedal by the driver.

4. (new) In a fuel cell vehicle equipped with a fuel cell, an idle control system, a driving motor, a power storage supply, a hydrogen supply, an air compressor and auxiliary equipment, a method of generating electrical current comprising the steps of:

identifying the occurrence of an idle state, said idle state being based on at least one of the speed of said fuel cell vehicle being lower than a pre-determined value, the expected power consumption of the driving motor being lower than a pre-determined value and the power of the electrical load being lower than a pre-determined value;

selecting a power generation mode in response to the occurrence of the idle state; and

adjusting the power generation of the fuel cell based on the selected power generation mode using said idle control system.

5. (new) The method of claim 4 wherein the power of the electrical load includes the power requirements of said driving motor, the power requirements of said air compressor used to supply hydrogen from said hydrogen supply to said fuel cell and the power requirements of said auxiliary equipment in said fuel cell vehicle.

6. (new) The method of claim 4 wherein the selection of a power generation mode comprises the further steps of:

selecting an idle stop mode, said idle stop mode being selected based on a determination that said power storage supply exceeds a pre-determined parameter; and

stopping the generation of electrical current by said fuel cell.

7. (new) The method of claim 6, comprising the further steps of:

identifying a need for increased power while in said idle stop mode; and

exiting said idle stop mode to return to a normal power generation mode, said normal power generation mode supplying electrical current directly from said fuel cell to said driving motor and said auxiliary equipment.

8. (new) The method of claim 4 wherein the selection of a power generation mode comprises the further steps of:

selecting an idle charge mode, said idle charge mode being selected based on a determination that said power storage supply does not exceed a pre-determined parameter; and

adjusting the electrical current generated by the fuel cell according to the optimum power generation efficiency of the fuel cell, said optimum power generation efficiency based on identified parameters.

9. (new) The method of claim 8 wherein the adjustment of the electrical current generated by the fuel cell to an optimum level comprises the further steps of:

determining the total power generated by the fuel cell;

subtracting the power consumption of the air compressor;

dividing the result of the total power generated by the fuel cell minus the power consumption of the air compressor by the total generated power and multiplying the overall result to arrive at an efficiency percentage; and

adjusting the power generated by the fuel cell based on said efficiency percentage.

10. (new) The method of claim 8 wherein said generated electrical current is stored in said power storage supply.

11. (new) The method of claim 8, comprising the further steps of:

identifying a need for increased power while in said idle charge mode; and

exiting said idle charge mode to return to a normal power generation mode, said normal power generation model supplying electrical current directly from said fuel cell to said driving motor and said auxiliary equipment.